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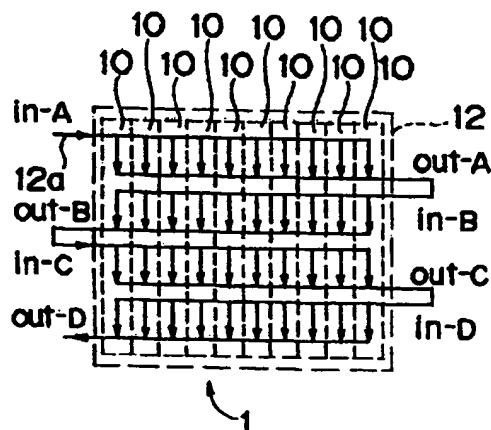
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(54) **Fuel cell stack**

(57) A fuel cell (1) has a plurality of passages for conveying a fluid in a stack (12) formed of a plurality of unit cells (10). The connection of the passages is changed in accordance with the operating condition of the fuel cell (1). If the passage connection is thus changed, the passage resistance in the stack changes, so that an optimal performance of the fuel cell (1) can be achieved in accordance with the operating condition thereof.

FIG. 1B



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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (InCl.7)
X	PATENT ABSTRACTS OF JAPAN vol. 010, no. 179 (E-414), 24 June 1986 (1986-06-24) -& JP 61 027071 A (MITSUBISHI ELECTRIC CORP), 6 February 1986 (1986-02-06) * abstract; figures 4,5 *	1-3,5,9	H01M8/04 H01M8/24 H01M8/10
Y	----	6,7	
X	PATENT ABSTRACTS OF JAPAN vol. 1998, no. 04, 31 March 1998 (1998-03-31) -& JP 09 312168 A (TOYOTA MOTOR CORP), 2 December 1997 (1997-12-02) * abstract; figures *	1,2,9	
P,X	PATENT ABSTRACTS OF JAPAN vol. 1999, no. 08, 30 June 1999 (1999-06-30) -& JP 11 067260 A (TOYOTA MOTOR CORP), 9 March 1999 (1999-03-09) * abstract; figures 1,2 *	1,2	
Y	EP 0 589 850 A (TANAKA PRECIOUS METAL IND ;WATANABE MASAHIRO (JP); STONEHART ASS I) 30 March 1994 (1994-03-30) * column 4, line 43 - column 4, line 50; examples 1,2 *	6,7	TECHNICAL FIELDS SEARCHED (InCl.7) H01M
A	US 4 397 918 A (CHI CHANG V) 9 August 1983 (1983-08-09) * column 2, line 39 - column 2, line 62; figures 1,2 *	4	
A	WO 85 01072 A (SUTTER ROBERT C) 14 March 1985 (1985-03-14)		
The present search report has been drawn up for all claims			
Place of search MUNICH		Date of completion of the search 23 February 2001	Examiner Hammerstein, G
<p>CATEGORY OF CITED DOCUMENTS</p> <p>X: particularly relevant if taken alone Y: particularly relevant if combined with another document of the same category A: technological background O: non-written disclosure P: intermediate document</p> <p>T: theory or principle underlying the invention E: earlier patent document, but published on, or after the filing date D: document cited in the application L: document cited for other reasons</p> <p>&: member of the same patent family, corresponding document</p>			

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**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 99 10 5757

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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23-02-2001

Patent document cited in search report		Publication date	Patent family member(s)		Publication date
JP 61027071	A	06-02-1986	NONE		
JP 09312168	A	02-12-1997	NONE		
JP 11067260	A	09-03-1999	NONE		
EP 0589850	A	30-03-1994	JP	6068899 A	11-03-1994
US 4397918	A	09-08-1983	BR	8301796 A	20-12-1983
			CA	1182519 A	12-02-1985
			DE	3365801 D	09-10-1986
			EP	0091658 A	19-10-1983
			JP	1060906 B	26-12-1989
			JP	1574171 C	20-08-1990
			JP	58184271 A	27-10-1983
			MX	153500 A	07-11-1986
WO 8501072	A	14-03-1985	EP	0156795 A	09-10-1985

EPO FORM P049

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82